

**GOVERNMENT POLYTECHNIC, BALASORE**

Government of Odisha

ସରକାରୀ ବହୁବୃତ୍ତି ଅନୁଷ୍ଠାନ, ବାଲେଶ୍ଵର

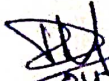
LESSON PLAN (SUMMER – 2025)


DISCIPLINE: ELECTICAL ENGG.	SEMESTER: 4 th	NAME OF THE TEACHING FACULTY: DEBASISH MOHAPATRA (E &TC)
SUBJECT: Analog Electronics and OP-AMP	No. of Days/per week class allotted: 4	Semester From Date: 4 TH February, 2025 No.of Weeks:15
WEEK	NO. OF DAYS/PER WEEK CLASS ALLOTTED	THEORY TOPICS
1 st	1 st	P-N JUNCTION DIODE: 1.1P-N Junction Diode
	2 nd	1.2Working of Diode 1.3 V-I characteristic of PN junction Diode.
	3 rd	1.4 DC load line1.5 Important terms such as Ideal Diode, Knee voltage
	4 th	1.6Junctions break down. Zener breakdown, Avalanche breakdown
2 nd	1 st	1.7P-N Diode clipping Circuit .
	2 nd	1.8 P-N Diode clamping Circuit,
	3 rd	SPECIAL SEMICONDUCTOR DEVICES: 2.1Thermistors
	4 th	2.1Sensors & barretters
3 rd	1 st	2.3 Tunnel Diode
	2 nd	2.4 PIN Diode
	3 rd	RECTIFIER CIRCUITS & FILTERS: 3.1. Classification of rectifiers 3.2 Analysis of half wave, full wave centre tapped and Bridge rectifiers and calculate
	4 th	3.2.1DC output current and voltage, 3.2.1RMS output current and voltage
4 th	1 st	3.2.3Rectifier efficiency
	2 nd	3.2.4Transformer utilization factor,3.2.7 Peak inverse voltage
	3 rd	3.Filters: 3.3.1Shunt capacitor filter,
	4 th	3.3.2Choke input filter,
5 th	1 st	3.3.3 π filter
	2 nd	TRANSISTORS: 4.1 Principle of Bipolar junction transistor,
	3 rd	4.2Different modes of operation of transistor
	4 th	4.3Current components in a transistor
6 th	1 st	4.4Transistor as an amplifier
	2 nd	4.5Transistor circuit configuration & its characteristics4.5.1 CB Configuration
	3 rd	4.5.2CE Configuration
	4 th	4.5.3CC Configuration
7 th	1 st	TRANSISTOR CIRCUITS: 5.1 Transistor biasing
	2 nd	5.3Stability factor
	3 rd	5.3Stability factor
	4 th	5.4Different method of Transistors Biasing:5.4.1 Base resistor method

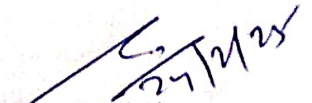
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8 th	1 st	5.4.2 Collector to base bias
	2 nd	5.4.3 Self bias or voltage divider method
	3 rd	TRANSISTOR AMPLIFIERS & OSCILLATORS :6.1 Practical circuit of transistor amplifier, 6.2 DC load line and DC equivalent circuit
	4 th	6.3 AC load line and AC equivalent circuit ,6.4 Calculation of gain
9 th	1 st	Phase reversal
	2 nd	H-parameters of transistors
	3 rd	Simplified H-parameters of transistors
	4 th	Generalised approximate model Analysis of CB, CE, CC amplifier using generalised approximate model
10 th	1 st	Multi stage transistor amplifier R.C. coupled amplifier
	2 nd	Transformer coupled amplifier, Feed back in amplifier
	3 rd	General theory of feed back .Negative feedback circuit
	4 th	Advantage of negative feed back Power amplifier and its classification
11 th	1 st	Difference between voltage amplifier and power amplifier Transformer coupled class A power amplifier
	2 nd	Class A push – pull amplifier ,Class B push – pull amplifier.
	3 rd	Oscillators ,Types of oscillators, Essentials of transistor oscillator
	4 th	Principle of operation of tuned collector, Hartley, colpitt, phase shift, wein-bridge oscillator (no mathematical derivations)
12 th	1 st	Principle of operation of tuned collector, Hartley, colpitt, phase shift, wein-bridge oscillator (no mathematical derivations)
	2 nd	7: FIELD EFFECT TRANSISTOR: Classification of FET Advantages of FET over BJT
	3 rd	Principle of operation of BJT
	4 th	Principle of operation of BJT
13 th	1 st	FET parameters (no mathematical derivation) DC drain resistance; AC drain resistance; Trans-conductance
	2 nd	FET parameters (no mathematical derivation) DC drain resistance; AC drain resistance; Trans-conductance
	3 rd	Biasing of FET
	4 th	OPERATIONAL AMPLIFIERS: General circuit simple of OP-AMP and IC – CA – 741 OP AMP, Operational amplifier stages

14 th	1 st	Equivalent circuit of operational amplifier, Open loop OP-AMP configuration
	2 nd	Equivalent circuit of operational amplifier, Open loop OP-AMP configuration
	3 rd	OPAMP with fed back Inverting OP-AMP
	4 th	Non inverting OP-AMP Voltage follower & buffer
15 th	1 st	Differential amplifier Adder or summing amplifier
	2 nd	Sub tractor Integrator
	3 rd	Differentiator
	4 th	Comparator


04.02.2025
FACULTY


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PRINCIPAL